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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,804	01/12/2001	Surajit Chaudhuri	15-910 - 4254	2731

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EXAMINER

FILIPCZYK, MARCIN R

ART UNIT	PAPER NUMBER
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2163

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/759,804	Applicant(s) CHAUDHURI ET AL.	
	Examiner Marc R. Filipczyk	Art Unit 2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 1-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 49-54 is/are rejected.
- 7) ☒ Claim(s) 53 and 54 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

This action is responsive to Applicant's response filed on September 6, 2005 wherein claims 1-48 have been cancelled and new claims 49-54 are added.

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. amendments, 35 U.S.C. 112, objections and the like) set forth by the Examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

Claim Objections

Claims 53 and 54 are objected to because of the following informalities: Regarding claim 53, "the database" in the collecting information step should be replaced with "a database" to introduce the database in the claim.

Claim 54 depends from claim 53 and is objected to on the same merits.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 49-54 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth whether the invention is within the technological arts.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural

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phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the “progress of science and the useful arts” (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a claim to pass muster, the recited steps must somehow apply, involve, use, or advance the technological arts such as a computer and generate a tangible result.

In the present case, independent claims 49 and 53 only recite an abstract idea. The recited steps of approximating an answer by using tuples do not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. These steps only constitute an idea of approximating an answer and do not return any usable/functional result.

Since the claimed invention, as a whole, is not within the technological arts as explained above, claims 50-52 and 54 which depend from claims 49 and 53 respectively, are deemed to be directed to non-statutory subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 49-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 49 and 53, the term “tuple” is indefinite. It is not clear what the metes and bounds of tuple are. Further it is not clear how the tuples are managed. Second, the

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segment, “sample tuples” are indefinite. It is not clear what sample tuples are selected. Third, the feature of “approximating an answer” is indefinite. Approximating is not distinct and does not generate the same result every time. Further regarding claim 53, the preamble of “one or more” is indefinite. It is not clear what computer readable media if more than one implements what portion of the method. Last regarding claim 53, the segment, “the sample” is indefinite. It is not clear whether a sample of weights or tuples is used in the executing step.

Regarding claims 50-52 and 54 depend from claims 49 and 53 respectively, and therefore contain the deficiencies of those claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 49-51 and 53 are rejected under 35 U.S.C. 102(e) as best as the Examiner is able to ascertain as being anticipated by Osborn et al (U.S. Patent No 6,026,391).

Regarding claims 49-51 and 53, Osborn discloses a method and medium for estimating result of a current database query, comprising: (title)

collecting information related to past queries against a database (col. 6, line 44-50);

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(Note: results of past queries are obtained from a database after execution of the database)

examining the collected information to determine an access frequency for each tuple accessed during the past queries [particular table and columns accessed] (col. 6, lines 51-54, 59 and 65-67);

determining sample weight based on the access frequency of the tuples (col. 7, lines 17-23);

(Note: statistics cache 48 includes number of times particular table and columns were accessed)

selecting a sample of tuples from the database based on weights of the tuples; (col. 7, lines 17-23); and

(Note: result sets of past queries)

executing a query against the sample to determine an approximate answer to the query made against the database [compare result set with past queries] (fig. 4, item 80). In addition, Osborn teaches using a probability [estimates] (col. 6, lines 23-30).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 52 and 54 are rejected under 35 U.S.C. 103(a) as best as the Examiner is able to ascertain as being unpatentable over Osborn et al (U.S. Patent No 6,026,391) in view of Acharya et al (U.S. Patent No. 6,519,604).

Regarding claims 52 and 54, Osborn discloses all of the subject matter as discussed above with respect to claims 49 and 53 including sampling but does not expressly teach computing an inverse of probabilities. However, Acharya discloses an approximating querying method for databases with multiple grouping attributes (see title, Acharya) and teaches calculating aggregates (fig. 6, Acharya) for each sampled tuple (*Grouping Columns*) and multiplies each value by an inverse of the probability with which corresponding tuples were sampled (col. 12, lines 13-23, Acharya).

Hence, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to calculate aggregates in Osborn system as done in Acharya method by expanding upon Osborn's potential execution plan that is based on workload storage of characteristics for the respective tables, clusters and indexes to be used (col. 6, lines 27-29, Osborn) to further calculate by using inverse of probabilities and keep track of all the aggregates (attributes and characteristics) of the desired tuples (records) to more precisely process sampled queries and maximize efficiency of the performed search.

Response to Arguments

Applicant's arguments and amendment filed on September 6, 2005 have been fully considered but they are not persuasive. The arguments and responses are listed below.

Applicant argues on pages 5-7 in the 9/6/05 response that the newly submitted set of claims is now patentable over the previous rejection and that the prior art does not teach Applicants invention.

In response to Applicant's argument, Examiner disagrees. Many features in the new claims contain deficiencies and are rejected under 35 U.S.C. 112, second paragraph and 35 U.S.C. 101. In addition, Examiner also rejects the claims with prior art as they are not allowable.

With respect to all the pending claims 49-54, Examiner respectfully traverses Applicant's assertion based on the discussion and rejection cited above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc R. Filipczyk whose telephone number is (571) 272-4019. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MF
December 2, 2005


FRANTZ COBY
PRIMARY EXAMINER